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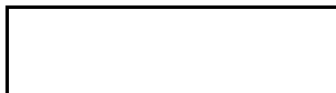


Intelligence Memorandum

Implications of the Health

Situation in Cambodia

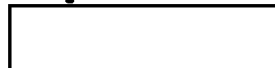
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Intelligence Memorandum

IMPLICATIONS OF THE HEALTH SITUATION IN CAMBODIA

Project Officers

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September 1975

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CENTRAL INTELLIGENCE AGENCY
DIRECTORATE OF SCIENCE AND TECHNOLOGY
OFFICE OF SCIENTIFIC INTELLIGENCE

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IMPLICATIONS OF THE HEALTH SITUATION IN CAMBODIA

About 4 million Cambodians, approximately one-half of the country's population, suddenly were forced by the Khmer Communists (KC) in April 1975 to leave the cities in order to plant crops in rural areas. [REDACTED]

[REDACTED] this act has resulted in severe dislocations throughout the country and could result in a mortality of about one-eighth of the population by the [REDACTED] of 1976 due to widespread conditions of severe hardship, starvation, and disease. The KC apparently did not consider either the complete unpreparedness of city dwellers to become farmers suddenly or the inability of the new regime to furnish any of the means for such a resettlement. It is likely that the mass population movement will adversely affect the harvest rather than help it.

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SUMMARY AND CONCLUSIONS

The disease factors having the greatest impact on the deteriorating health situation in Cambodia are a widespread cholera epidemic and the prevalence of a particularly severe form of malaria. Of greatest concern is El Tor cholera which spread rapidly among the displaced population, the KC, and the rural population and had resulted in a serious epidemic by mid-June. A relatively minor health problem in Cambodia for over a decade, cholera spread unchecked this year because of mass forced migration, unusually acute shortages of medical resources, inadequate food and shelter, and a general lack of sanitation facilities. This epidemic is expected to become endemic to large areas of Cambodia, and significant outbreaks of the disease can be expected over at least the next several years.

As of September 1975 the health problem situation has not improved and the food shortage has slowly begun to spread northward from the already deficient Southwest sector.

Except for moderate amounts of aid from the People's Republic of China, the KC has permitted no foreign aid to enter Cambodia. In the face of the growing disease and food problems, Cambodia is completely unable to supply the necessary medical assets from its own acutely short resources.

The present cholera epidemic in Cambodia now has spread to Thailand, South Vietnam, and Laos. All of these countries are critically short of physicians and drugs and little can be done to contain the disease. There is some epidemiological evidence that the incidence of cholera has been increasing slowly in Thailand, and possibly Laos and South Vietnam, over the past 2 years. The infusion of cholera from Cambodia can be expected to exacerbate the cholera situation in these three countries and lead to epidemics throughout Southeast Asia, possibly this year and for several years to come.

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DISCUSSION

INTRODUCTION

Following their takeover of Cambodia on 17 April 1975, the Khmer Communists (KC) ordered the evacuation of Phnom Penh and, subsequently, of other cities.¹ Within a few days up to 4 million Cambodians were being marched into the countryside to plant rice and other crops.^{2,3} The marchers were on the road for several days to 2 weeks and had few or no personal belongings. The KC offered little or no food, water, shelter, or medical care during the marches.⁴ The displaced people had to exist almost entirely on forage from the land, drink what surface water could be found, and sleep on bare ground.³ By 29 April, "hundreds of bodies" were reported seen along the road to Prek Kadam north of Phnom Penh, and physicians among these marchers indicated that the deaths were due to "cholera, dehydration, and hunger."⁷

Upon their arrival at designated farming areas, the survivors were set to work tilling fields. Since farm tools and animals were in short supply, teams were formed in which three or more men pulled a plow while another guided it. In some areas no tools were available and the fields could not be planted. Because of a shortage of rice, daily rations in some areas consisted of a condensed milk can full of rice and what forage could be found.³ Little forage remains, however, and many face starvation. Added to this, shelter is sparse or nonexistent, sanitation is extremely poor, and medical care and drugs are unavailable.¹⁻⁴

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THE CHOLERA THREAT

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El Tor cholera is endemic to certain restricted, usually rural, areas of Cambodia, and a few cases are reported yearly. The last significant outbreak of the disease in recent years occurred in the mid-1960s but did not reach serious epidemic proportions. During January and February of this year, cholera reportedly was widespread in the rural areas under KC control. Inadequate KC medical capabilities in these areas permitted the disease to spread.⁴ Refugees entering Phnom Penh apparently carried cholera into the city. In February, Phnom Penh health officials warned the city population that cholera was present, but the officials appeared unable to take effective steps to

25X1

contain the disease.⁵ In late April after the siege of Phnom Penh, at least 80 cholera cases were reported in the city.^{2,6} Since the evacuation of Phnom Penh is believed to have included hospital patients—some infected with cholera—as well as other residents, cholera quickly spread among the 2 million persons forced to leave that city. By the last half of May cholera was being reported from areas in Kandal, Takeo, Kampot, Prey Veng, and Kompong Cham Provinces along a northeast-southwest axis corresponding to the Phnom Penh migrations. Since numbers of the displaced persons sought escape to Thailand by traveling on foot northwest through Cambodia, cholera went with them and by mid-June the disease was reported in Kompong Speu, Pursat, Siem Reap, Battambang, and Oddar Meanchey Provinces.⁸⁻¹⁰

It is unlikely that the pre-takeover civilian medical establishment plus the rudimentary KC medical support assets could have effectively prevented the spread of cholera once outbreaks had occurred, even if the medical care system that existed prior to the Communist takeover had been allowed to remain intact. Hospital staffs as well as the patients also were evacuated from the cities.¹¹ Most of the medical facilities were located. Some cases of vaccine from city hospitals appears to have been available in April,⁶ but this was rapidly expended.

efforts also were launched to try and find displaced medical personnel who could treat casualties, and to recruit young KC men and women for 3 months of medical training at city hospitals and at KC medical facilities.

This belated attempt by the KC to recover displaced physicians and to train paramedical workers probably will have little effect on

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the present disease and hardship situation, particularly in view of indications that "scientific medicines" are in critically short supply and that traditional medicines will be used to treat diseases.¹³

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Total numbers of cholera cases cannot be determined [redacted] and it is unlikely that the KC themselves know the true extent of the disease spread. A press release from Bangkok on 18 June, however, stated that cholera had reached epidemic proportions.

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Medical personnel and facilities have always been in short supply in Cambodia. In 1971 there were only 232 fully qualified physicians, with a physician to population ratio of about 1:34,000. Since most or all of these physicians were marched to the countryside, it must be presumed that numbers of them have become casualties. Also in 1971 there were only 27 hospitals in Cambodia with a total bed capacity of less than 4,000.³² Numbers of KC personnel have received medical training at the hands of the North Vietnamese and the Viet Cong, but most of this training was sub-professional. Unless substantial numbers of foreign medical personnel, medicines, mobile clinical facilities, and vehicles are permitted into Cambodia in the near future, the present disease situation cannot be controlled, and health conditions following the cholera epidemic will remain precarious. Moreover, a leading expert in the epidemiology of cholera suggests that the present widespread epidemic could make cholera endemic to large areas of Cambodia instead of the few areas previously affected. Such an eventuality would result in significantly large cholera outbreaks each year for at least the next several years.

OTHER CONTRIBUTING PROBLEMS

A poor 1975 rice crop¹¹ will mean that hunger will remain a problem throughout most of the next year. Current food shortages emanate from the impact of war on agricultural areas. The rice shortage is now affecting all of Cambodia and even the KC are on

very short rations.¹⁰ In some areas, the seed rice is being consumed.¹³ Except for a moderate amount of Chinese aid,²⁰ the KC has permitted no foreigners or foreign aid to enter Cambodia. There are severe dislocations of transportation,¹⁷ and distribution of existing supplies is difficult.

A further complication of the chaotic health conditions is the omnipresence of malaria. Large-scale mosquito control campaigns have never been carried out in Cambodia and shortages of all of the essential means for mosquito control, prophylaxis, or treatment preclude any effective efforts at controlling malaria now and for the foreseeable future. While all four types of malaria are present, the most dangerous and common form in Cambodia is falciparum (malignant tertian) malaria. Falciparum malaria is often fatal in the first attack and a mortality of two to ten percent has been reported in tropical areas.¹⁸ In Southeast Asia, the epidemiology of falciparum malaria is of particular importance in that different strains of the parasite can exist in mosquito populations separated by only a few miles. Natives of one area tend to develop an immunity to the particular falciparum strain in that area. But should the native move to another area containing another strain of the same parasite, he is apt to become ill. The other three forms of malaria—vivax, ovale, and malariae—also will add to the general disease problem.

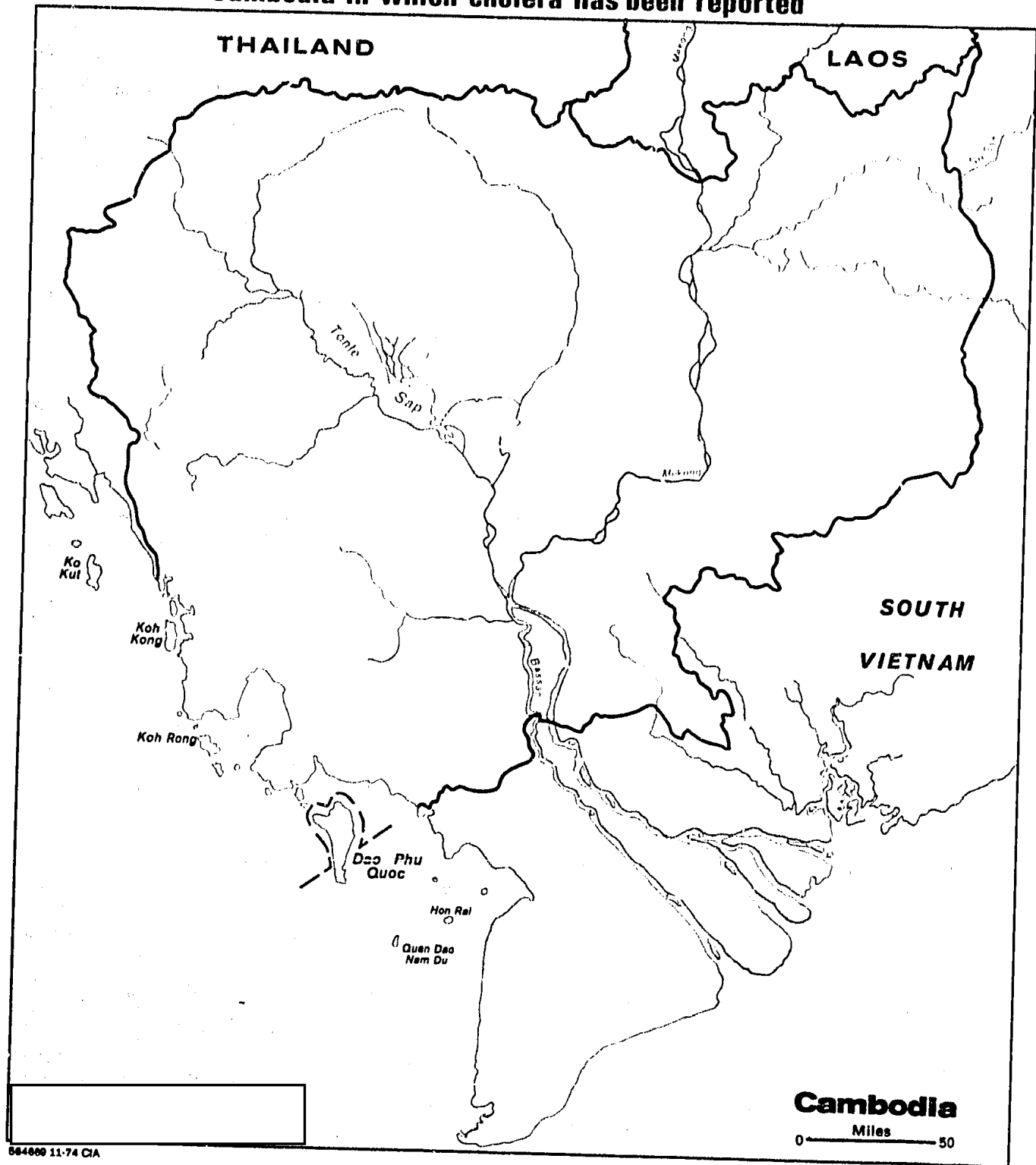
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25X1 TRENDS AND PROSPECTS

[redacted] more than 1 million Cambodians may die of starvation and disease.¹⁷ This figure, about one-eighth of Cambodia's population, is not out of line and could even be conservative. Uncontrolled cholera combined with the problems associated with the population disruption experienced by Cambodia has and will continue to contribute significantly to the deteriorating health situation.

Under these conditions, it may be expected that untreated cases of cholera would produce a mortality of 20 to 30 percent; mortality among persons already debilitated by hardship and/or malaria will tend toward the upper limit. Falciparum malaria can be expected to infect between 30 and 50 percent of the 4 million displaced Cambodians and those KC personnel and others who may be moving about

Provinces of Cambodia in which cholera has been reported



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Cambodia without the means for preventing or treating the disease. Of that 30 to 50 percent, at least 2 to 10 percent probably will die.¹⁸ Mortality among those with both cholera and malaria together should be higher than for either disease alone, but there is no statistical basis for assessing such mortality.

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It is likely, however, that malaria, particularly falciparum malaria, would compound the cholera problem. This comes about because the chills and fever of malaria cause an increase in caloric requirement of about 60 percent and an unavoidable loss of body protein. These conditions plus a lack of appetite during malarial episodes lead to malnutrition. This, in turn, results in a loss of resistance to infection which facilitates the contraction of cholera and/or other infectious diseases.³⁰

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The remaining 3 to 4 million inhabitants of Cambodia including the KC and rural peasants who were not displaced probably are able to satisfy their daily needs in part, at least for the present. Only KC cadre at this point appear to have access to any medical care and medicines, but KC medical services are extremely limited in amount and quality. Civilian medical personnel are lost among the displaced city population. All Cambodians at this point are subject to cholera, and the shortage of medical services for the KC insures that they will be subject also to malaria and other infectious diseases.

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Sparse reporting in the June-September 1975 period indicates that the health situation in Cambodia has not improved.

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the food shortage has spread northward somewhat, but prevails primarily in the southwest sector of the country. Large numbers of the population are being relocated out of food-deficient areas in an apparent attempt to reduce the problem and to resettle manpower for the November and December harvesting. Such relocations could involve the movement of individuals infected with cholera and malaria to uninfected areas, thus contributing to the further deterioration of the Cambodian health situation.

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The cholera epidemic in Cambodia appears to have spread to South Vietnam and Laos.

there are so few physicians in Thailand, particularly in rural areas, that most of the cholera cases there are going unreported and there are no reliable figures on incidence.³¹

The present border dispute between Cambodia and Vietnam notwithstanding, the new regime in Phnom Penh has been allowing—or perhaps forcing—ethnic Vietnamese to cross the border into South Vietnam. Many of those repatriated have come from or passed through areas where cholera is known to have broken out.

cholera has spread also to South Vietnam. Health conditions are deteriorating in the wake of the Communist takeover, and the Vietnamese will be hard pressed to contain the disease.

The spread of cholera to Laos was inevitable once the disease had reached Thailand and South Vietnam, because health conditions in Laos, always marginal, have deteriorated markedly over the past few months. The deterioration is due to acute shortages of medicines, the defection of many physicians and medical workers, and demands of the provisional Government of National Union that many of the remaining health workers attend political seminars lasting from 2 to 3 months up to a year or more.³³

There has been some epidemiological evidence that cholera has been on the increase in Thailand, Laos, and South Vietnam over the past 2 years.⁴ The infusion of cholera into these countries from Cambodia now could accelerate the spread of this disease throughout the area. Such a situation could lead to serious cholera outbreaks each year throughout Southeast Asia—any one of which could develop into a general epidemic.

APPENDIX

NATURE AND EPIDEMIOLOGY
OF CHOLERA

Cholera is an acute infectious disease characterized by profuse and purging diarrhea, vomiting, severe muscular cramps, suppression of urine, and collapse. There is great loss of fluid during the initial stage of the disease that produces acute dehydration. Death usually occurs due to collapse and uremia, often in the second day of frank illness but sometimes within a few hours.

Classical cholera is centered in India and Bangladesh and has been responsible for five worldwide epidemics in the 19th Century where mortality rates ran from about 50 percent to as high as 80 percent in some areas. The variety of cholera most commonly seen today, however, is a somewhat milder form known as El Tor, so named because it was first identified in 1905 among pilgrims at El Tor near Mecca. Mortality is lower for El Tor than for classical cholera and is on the order of 20 to 30 percent for untreated or poorly treated cases.

Cholera is transmitted primarily by excretions of infected persons. Cholera "carriers" or those in whom the disease is in the incubation stage are also important in the transmission of cholera. Excretions contaminate local water supplies which, in turn, infect other persons. This process is greatly facilitated when many infected persons are moving about an area without adequate sanitation. Heat, high humidity, and intermittent rain provide the best conditions for spread.¹⁸

Control of cholera consists basically of preventing the movement of infected persons, discovering the infected water source or sources, boiling all drinking and washing water, and quickly disinfecting areas, clothing, and objects contaminated with excretions of the sick. Cholera vaccine, while usually used, is of limited value in controlling epidemics.

Therapy for cholera is primarily supportive in nature although antibiotics such as tetracycline and chloramphenicol are used to shorten the period of diarrhea and hence restrict fluid loss. Procedures for the prevention of uremia are instituted, along with the constant replacement of lost fluids and electrolyte. Of these, fluid and electrolyte replacement are the most life saving.

COMMENTS ON FALCIPARUM MALARIA

While falciparum malaria is the most dangerous of the four main forms of malaria, its prevention is essentially the same as for the other forms—mosquito control and the use of prophylactic drugs. Personal prophylaxis consists of taking daily doses of quinine or pyrimethamine, the continual use of mosquito repellent, and the use of mosquito nets while sleeping. Spraying of living quarters or camp areas with DDT or dieldrin also will materially reduce the chances of infection, provided that the mosquitos are not resistant to these insecticides as many have become over the past decade. While vigorous hospital therapy can control the acute disease in the individual, prevention is the key to malaria control provided that the malaria organism is not resistant to antimalarials.

REFERENCES

The source references supporting this paper are identified in a list published separately. Copies of the list are available to authorized personnel and may be obtained from the originating office through regular channels. Requests for the list of references should include the publication number and date of this report.